

Mr. Henry Scherren's attractive and compendious little book stands rather apart from the rest. It aims, and aims successfully, at giving the young naturalist a pleasant idea of the invertebrates as a field of study. It is unfortunate that a wrong adjustment of the type on p. 49 has obscured the grouping of the cephalopods. The passage reads as if the second group no less than the first was subdivided into eight-armed and ten-armed species. The confusion is increased by a further accident on the following page, where the name of "the Pearly Nautilus" is attributed to the figure of "the Paper Nautilus," *Argonauta argo*, although it is

of technical names, but of Indian and English. Hence we learn that Mooweesuk is "the coon," and that Nemox is "the fisher," but whether the world has more than one coon or more than one fisher we are left wondering, and what in the world Mr. Long's "fisher" may be remains a problem, one of nature's riddles for Mr. Sheppard-Walwyn to solve.

It may be said of all these books, though their merits are various and their individual merit unequal, that they are good both to give and to receive.

T. R. R. S.

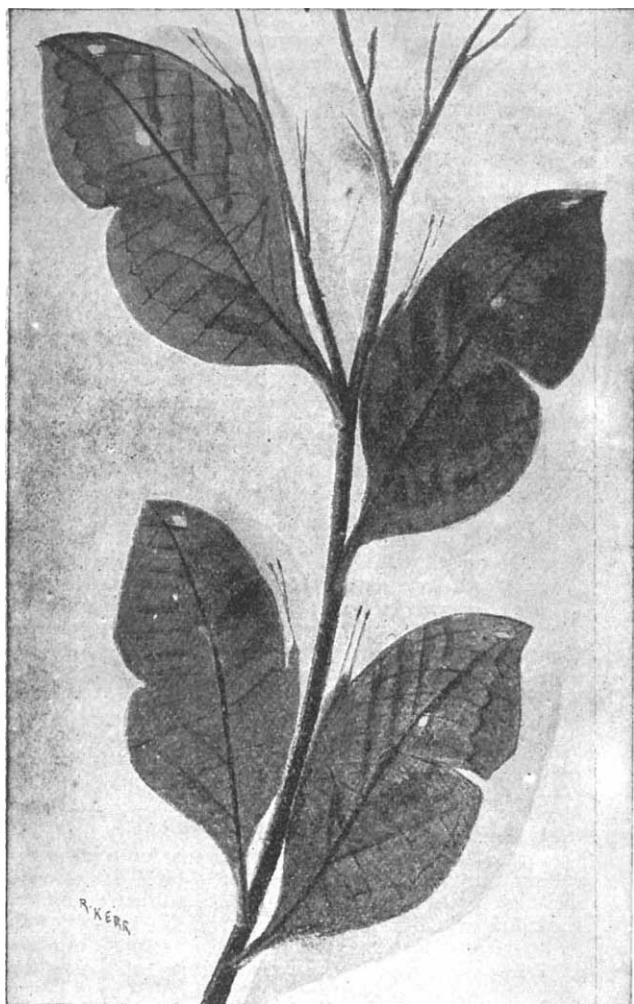


FIG. 2.—The Leaf-Butterfly. Rothschild Museum. (From "Nature—Curious and Beautiful.")

properly given later on to the *Nautilus pompilius* figured and discussed on p. 56. Such mistakes are likely enough to arise so long as publishers entertain a superstitious dread that the popularity of a book will be impaired by the introduction of technical scientific names. Alone among our authors, Mr. Kerr has been allowed to set this superstition at defiance. The public are seemingly expected to hail with delight such names as Mooweesuk and Musquash, and Chigwooltz and Unk Wunk. Perhaps they are pleasantly resonant of Longfellow's "Hiawatha." Otherwise they are no easier to remember than Linnean Latin. Mr. Long understands this, and kindly supplies a glossary, not

INDIAN METEOROLOGICAL MEMOIRS.¹

IT was only quite recently that there was noticed in these columns the volume containing the record of rainfall of each Indian station, printed in such a form that the reader could at a glance see the monthly, yearly, or monsoon fall for any year up to 1900. This important volume, published under the direction of Sir John Eliot, is now followed by another equally valuable, embodying all the pressure observations of each station for the whole period of observation up to the end of the year 1902. These pressures are all reduced to 32° F. and constant gravity (lat. 45°), but not for height above sea-level; the elevation of the cistern is, however, added in each case.

Previous to the year 1889, the monthly means given are those of the mean of the ten and sixteen hours' monthly mean, but after that year the 8 a.m. monthly values alone are employed. At the foot of each table the necessary information is given for converting one series into the other, so that no difficulty should be encountered in this respect.

As an indication of the thoroughness with which this compilation has been attended, the attention of the reader may be directed to appendix i., which contains notes on the positions of the observatories and the character of the barometric observations. Appendix ii. includes further important data, for here are collected for each station such valuable notes as makers and kinds of barometers employed, periods of use, positions, corrections to Calcutta standard, &c.

The data included in this volume refer to 121 different stations, and the records in most instances date from the year 1875.

Another memoir that has just recently been published is one which deals with the movements of the upper clouds. The observations were made at six stations, namely, Simla, Lahore, Jaipur, Allahabad, Vizagapatam, and Madras, and were recorded by means of Fineman's nephescopes, a description and illustration of which are given in the text.

The period of observation extended over the years 1895–1900, and in this volume not only is a monthly summary of the data for each of these stations inserted, but also the results of a brief discussion, and a series of twelve plates illustrating the mean directions of the different classes of clouds for each month of the year.

The following are among the chief results which have been gathered from this series of observations, but it is pointed out that a more extended series at

¹ Vol. xv., part i., Brief Discussion of the Cloud Observations Recorded at Six Stations in India. Pp. 112. Vol. xvi., part i., Monthly Normals of Air Pressure Reduced to 32° F. and Constant Gravity 45°. Pp. 184. (Published under the direction of Sir John Eliot, M.A., F.R.S., K.C.I.E., Meteorological Reporter to the Government of India and Director-General of Indian Observatories.)

twenty or thirty selected stations is desired to corroborate these facts and conclusions.

The amount of cirrus cloud is small during the rainy season in Upper India, and increases rapidly southwards, reaching a maximum in southern India.

The amount or frequency of cirro-stratus cloud is large in the dry season in northern India, and decreases rapidly southwards to southern India, where it is very small, as indicated by the Madras and Vizagapatam observations.

The amount of cirro-stratus is much smaller in the wet than in the dry season in Upper India. It is very small in the peninsula, almost as small as in the dry season. It is, on the other hand, of frequent occurrence over the area represented by Jaipur and Allahabad, and more especially in Allahabad.

Alto-cumulus cloud is a cloud of frequent occurrence in northern India throughout the whole year. It is of rare occurrence in the peninsula from November to May, and of occasional occurrence from June to October at Madras.

Cumulus and cumulo-nimbus are of frequent occurrence in the dry season at Simla, Jaipur, Vizagapatam and Madras, more especially at the two last-named coast stations, and are, in fact, the most characteristic clouds of the Indian area. They are of frequent occurrence in the wet season, more especially at the peninsular coast stations and at Jaipur and Allahabad.

It is noteworthy that cumulus and cumulo-nimbus are of much less frequent occurrence in the wet than in the dry season at Vizagapatam and Madras. The former type of cloud is also comparatively rare at Allahabad and the latter type of cloud at Jaipur in the dry season.

With regard to the directions of movements of the different types of clouds at the different seasons of the year, the maps in the volume illustrate the results most clearly. Reference may here, perhaps, be made only to the directions of the cirrus and cirro-stratus during the wet and dry seasons, and the following table sums up the information for the six stations.

Station	Mean direction of movement in			
	Dry Season		Wet Season	
	Cirrus	Cirro-stratus	Cirrus	Cirro-stratus
Simla	S. 8° W.	S. 82° W.	S. 85° W.	S. 69° W.
Lahore	S. 86 W.	S. 86 W.	S. 48 W.	N. 81 W.
Jaipur	N. 86 W.	N. 87 W.	N. 78 W.	N. 80 W.
Allahabad ...	S. 82 W.	S. 83 W.	N. 83 W.	S. 65 W.
Vizagapatam...	S. 4 W.	S. 27 W.	N. 72 E.	N. 65 E.
Madras	S. 13 W.	S. 86 W.	S. 82 E.	N. 87 E.

It will be seen that the movements of the two kinds of clouds in both seasons are practically the same in Upper or north-west India, but differ very considerably when the stations are more south.

It may further be noted that in the more northern stations the air movement as observed by the upper clouds is very steady in the direction from almost due west to east, and this is more especially so during the dry season from November to May.

During this small number of years of observation it was detected that the mean direction of the cirrus movement varied slightly in the same months or seasons of different years. This variation, as Sir John Eliot states, is almost certainly real, and represents a phase in the upper air movement over a considerable area.

Previous to these cloud observations it had been estimated on theoretical grounds that the south-west

monsoon currents reach up to an average elevation of 10,000 to 15,000 feet, no actual measurements having been made. Sir John Eliot here points out that the most remarkable feature of the present cloud observations is the great variability or unsteadiness of the cloud movement during this period up to the elevation of the highest cirrus at Allahabad, in the centre or axis of the trough of low pressure. From cloud measurements made by photogrammeters at Allahabad during the wet seasons (June to September) of the years 1898 to 1900, it was deduced that the variable or unsteady movement in the monsoon trough extended "to a probable elevation of 30,000 feet at least, and perhaps even to 40,000 feet, and that the regular movement in the higher atmosphere from west to east is either suspended or occurs at a much greater elevation than in the dry season."

The important results obtained by determining the movements of the air currents at different heights by means of the observations of clouds indicate that the use of kites and unmanned balloons will perhaps prove a valuable auxiliary.

The appearance of these two important memoirs so recently after the one to which reference has already been made will give the reader some notion of the activity displayed by the Indian Meteorological Department under the distinguished direction of Sir John Eliot, and of the valuable researches which it contributes to meteorological science.

W. J. S. L.

THE FOOD AND DRUGS ACTS.¹

THE two Parliamentary papers mentioned below, although widely different in character, are, at bottom, intimately connected with a common question, namely, the effective administration of the enactments dealing with the adulteration of food and drink.

The Food and Drugs Acts are now upwards of a third of a century old. They have been considered and reconsidered by Parliament at various times even down to the year 1899, and in the consideration have had to run the gauntlet of much deliberate obstruction from faddists, federations, and that class of free-fooders which regards any legislative interference with the buying and selling of anything of the nature of food, however bad, as noxious economic heresy, and a restriction of the free play of competition. That the Acts contain compromises, inconsistencies, and anomalies is well known to those who have anything to do with their administration. Nor has the judge-made law by which these anomalies have been interpreted tended to their smoother working; indeed, it has caused them to be absolutely inoperative in certain directions. How imperfect the Acts are is strikingly exemplified in the two papers before us.

The first, and in a sense the most important, of these is the final report of the Royal Commission appointed to inquire into arsenical poisoning from the consumption of beer and other articles of food or drink. It will be remembered that in the latter part of 1900 there occurred a serious epidemic of poisoning which was traced to arsenical contamination of beer at numerous breweries through the use of brewing sugars manufactured by a single firm in the neighbourhood of Liverpool. The arsenic was introduced into these sugars by way of a highly arsenical sulphuric acid supplied by a firm of chemical manufacturers in

¹ Final Report of the Royal Commission appointed to inquire into Arsenical Poisoning from the Consumption of Beer and other Articles of Food or Drink. Parliamentary Paper. Cd. 1848. 1903.

Final Report of the Departmental Committee appointed by the Board of Agriculture and Department of Agriculture and other Industries and Technical Instruction for Ireland to inquire and report upon the desirability of Regulations under Section 4 of the Sale of Food and Drugs Act 1899 for Butter. Parliamentary Paper. Cd. 1749. 1903.